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EP 0240644 A1

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(54) Mounting electric motor within a housing for auxiliary drives in a motor vehicle

(57) The Intermediate mounting part (20) comprises sealing lips (58, 54) on the inner and outer circumferential area (32, 38) of the annular section 30. A recess (56) in one end face absorbs distortion when the holding body (20) is inserted between the housing 22 and the stator/rotor assembly. Arms 44 extend from the ring 30 and engage the surface of the body or intermediate bushing 34, resilient members on the end of the arms locking in detents in housing portion 46.

FIG. 1

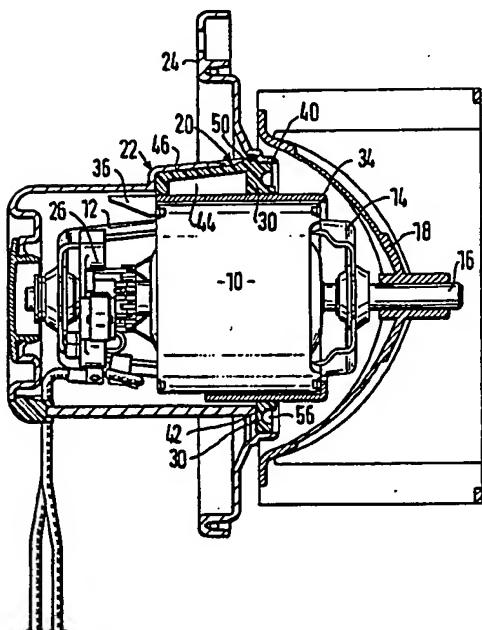
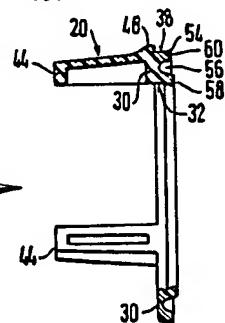


FIG. 2



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FIG. 1

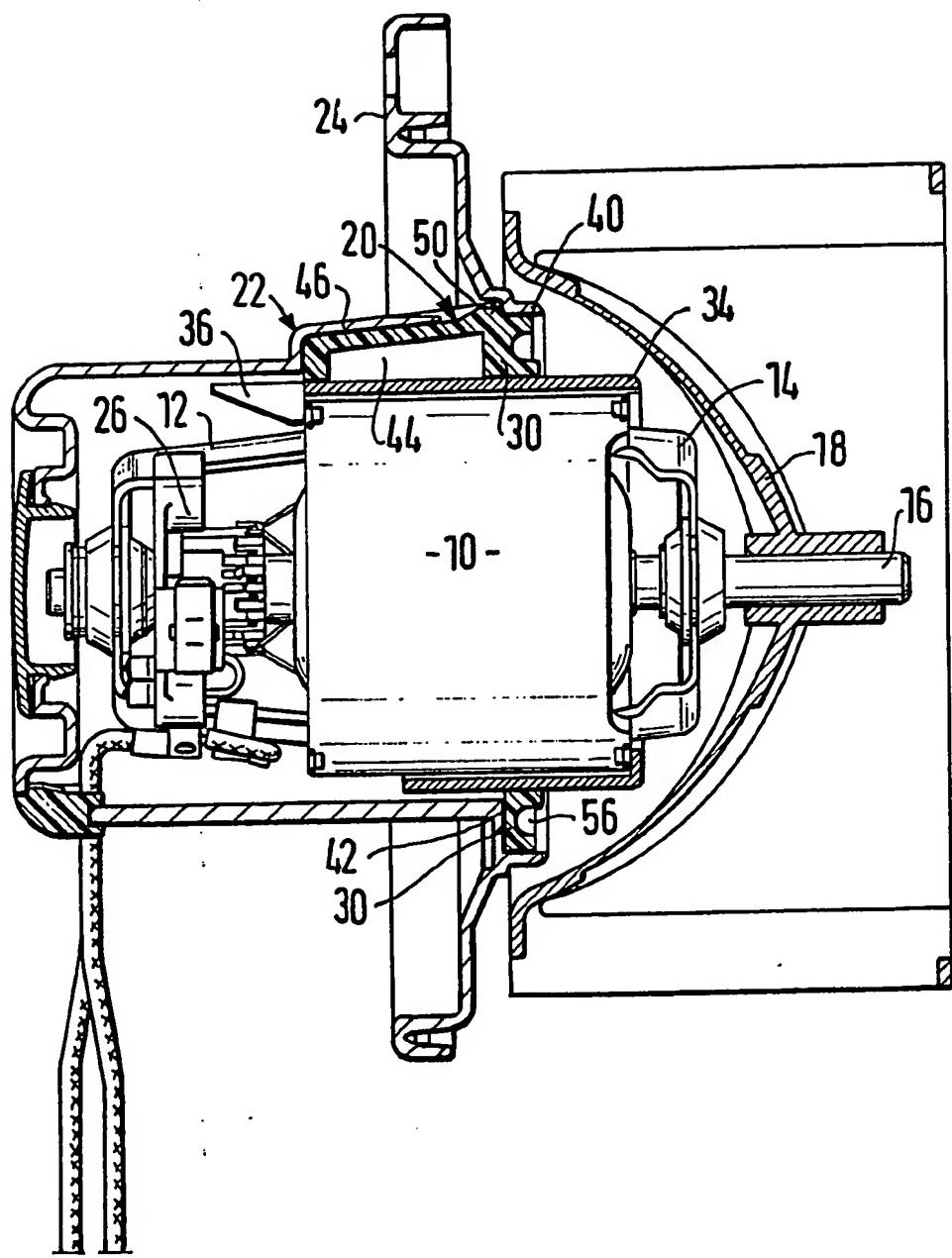


FIG. 2

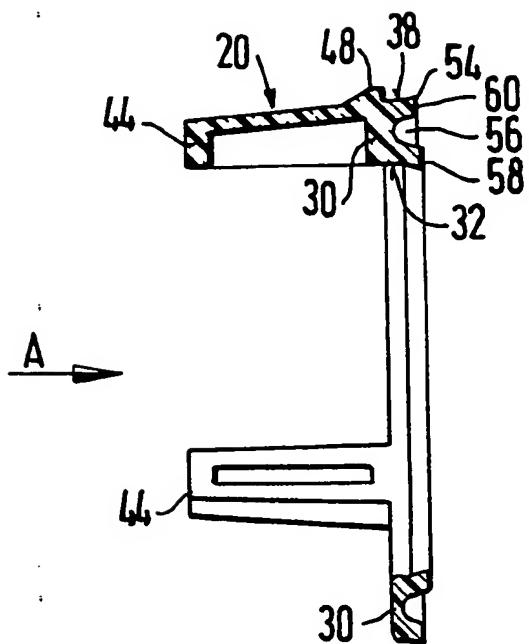
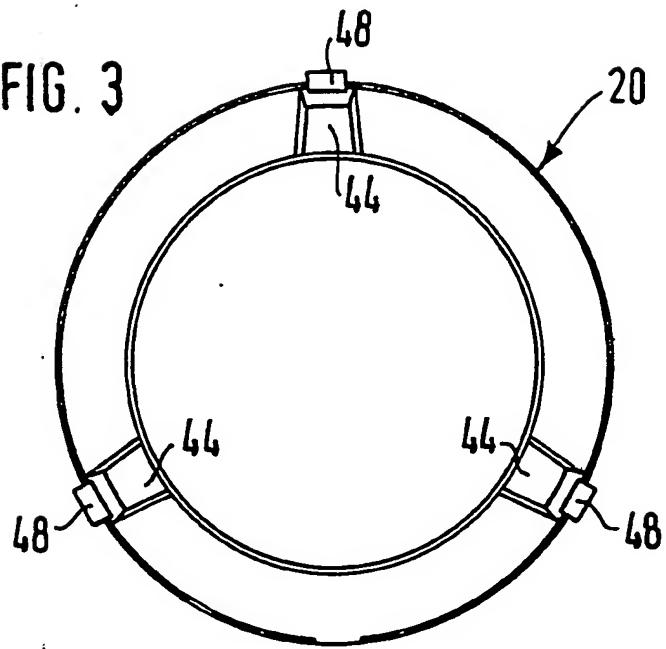


FIG. 3



Electric motor, particularly a low-power motor for auxiliary drives in a motor vehicle

Prior art

The invention is based on an electric motor of the generic type of the main claim. In known electric motors of this generic type, the circumferential areas on the annular part of the holding body resting against the stator or, respectively, the intermediate bush and the motor casing after the assembly of the parts are constructed to be smoothly cylindrical throughout and are provided with a slight excess dimension so that correct holding of the stator is obtained with simultaneous coupling-in of noise. In this embodiment, however, there is no correct sealing between the two end faces of the annular part, which can be disadvantageous in some applications. If the radial dimensions of the annular part are designed with a greater excess dimension in order to achieve a better sealing effect, the assembly of the parts can be made considerably more difficult when tolerances are disadvantageously paired.

Advantages of the invention

By comparison, the arrangement according to the invention, having the characterising features of the main claim, has the advantage that a good sealing effect can be achieved by means of measures which do not make the assembly of the parts more difficult and, nevertheless, ensure correct seating of the stator in the motor casing. With the appropriate selection of material and pre-tension, the holding body can simultaneously properly fulfil the three functions of holding, noise decoupling and sealing.

The arrangement according to the main claim can be advantageously developed further by the measures contained in the subclaims.

A particularly precise seating of the stator in the motor casing can be achieved when the sealing lips on the holding body are formed by annular edge areas of the annular part which are constructed to be rising over its inner or outer circumferential area.

The annular part of the holding body can be provided with a greater radial excess dimension and the production tolerances of the motor casing and of the stator or of the intermediate bush can be made less precise without disadvantageous influence on the functional capability of the holding body if the annular part is provided on one end face with a peripheral recess and the annular cheeks, formed by the recess, of the annular part carry the sealing lips. The recess accommodates the displacement of material caused by the deformation of the annular part so that the assembly of the parts is also not made more difficult when the annular part has a greater excess dimension.

Drawing

An illustrative embodiment of the invention is shown in the drawing and explained in greater detail in the description following. Figure 1 shows an electric fan motor of a motor vehicle in longitudinal section, Figure 2 shows the holding body of the fan motor according to Figure 1 in section and Figure 3 shows the holding body according to Figure 2 seen in the direction of the arrow A drawn there.

Description of the illustrative embodiment

The fan motor shown has a stator 10, on which two bearing brackets 12, 14 for a rotor shaft 16 are mounted which carries a fan wheel 18. The stator 10 is mounted in a noise-decoupled manner by a holding body 20 consisting of plastic in a motor casing 22 which is

provided with a mounting flange 24. The motor casing 22 overlaps a part of the stator 10 and of the bearing bracket 12, in the area of which the power supply device 26, not described in greater detail, of the fan motor is provided.

The holding body 20 has a peripheral annular part 30 which, with its inner cylindrical circumferential area 32 (Figure 2) encircles an intermediate bush 34 which is pushed onto the stator 10 and is held thereon by spring tongues 36. The intermediate bush 34 is provided on its circumference with elevations, not visible in the drawing, for axially holding the annular part 30. The latter also has an outer cylindrical circumferential area 38 which is firmly encircled by a hub-like annular collar 40 of the motor casing 22, which is open at this location. The motor casing 22 is also provided with a plane support area 42, adjoining the annular collar 40, for axially supporting the annular part 30.

On the annular part 30, three arm parts 44, which extend over the stator 10 in the axial direction, are moulded on uniformly distributed over the circumference. The arm parts 42 rest against the stator 10 on the inside and against appropriately moulded-out wall sections 46 of the motor casing 22 on the outside. The plane support area 42 of the latter is recessed at the locations of the wall sections 46. The holding body 20 is also provided with three locking noses 48, distributed uniformly over the circumference, which, when the holding body 20 is pushed into the motor casing 22, lock behind shoulders 50 on its annular collar 40.

The annular part 30 is provided with an inner peripheral sealing lip 52 and with an outer peripheral sealing lip 54 which closely rest against the intermediate bush 34 and, respectively, the annular collar 40 of the motor casing 22 after the parts have been assembled. The two sealing lips 52, 54 are formed through [sic] so that the two annular edge areas located at the free end face are constructed to be rising to the inside

and to the outside over the corresponding circumferential area 32 and, respectively, 38. The annular part 30 is also provided with a peripheral recess 56 by which two annular cheek [sic] 58, 60 are formed which carry the sealing lips 52, 54.

Compared with an embodiment with smoothly cylindrical circumferential areas on the ring part 30, arranging the sealing lips 52, 54 on the holding body 20 results in a much improved sealing effect without making it more difficult to assemble the parts. The recess 56 accommodates the material displaced during the distorting of the annular part 30 and imparts a greater elasticity to the annular cheeks 58, 60 carrying the sealing lips 52, 54 so that the production tolerances of the parts can be made less precise and/or a greater selection of material is available for producing the holding body 20.

Claims

1. Electric motor, particularly a low-power motor for auxiliary drives in a motor vehicle, the stator of which is held in a noise-decoupled manner in a motor casing by means of a holding body which has an annular part locked in the motor casing, which encircles the stator, or an intermediate bush pushed onto the latter, without tolerance and is connected to axially protruding arm parts which rest on the stator and are radially supported on the motor casing towards the outside, characterised in that the annular part (30) of the holding body (20) is provided both on the inner and on the outer circumference with a sealing lip (52, 54) which rests sealingly against the stator (10) or, respectively, the intermediate bush (34) and against the motor casing (22) after the assembly of the parts.

2. Electric motor according to Claim 1, characterised in that the sealing lips (52, 54) are formed by annular edge areas of the annular part (30) which are constructed to be rising over its inner and outer circumferential area (32, 38).

3. Electric motor according to Claim 1 or 2, characterised in that the annular part (30) of the holding body (20) is provided on one end face with a peripheral recess (56) and the annular cheeks (58, 60) formed by the recess (56) carry the sealing lips (52, 54).

4. An electric motor substantially as herein described with reference to the accompanying drawings.

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Examiner's report to the Comptroller under
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Search Examiner

J COCKITT

Databases (see over)

(i) UK Patent Office

(ii)

Date of Search

29 OCTOBER 1992

Documents considered relevant following a search in respect of claims 1-4

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
A	EP 0240644 A1 (DUCCELLIER)	

SF2(p)

DT - doc99\fil000438



Category	Identity of document and relevant passages	Relevance to claim(s)

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